

WHAT IS CLAIMED IS:

1. A semiconductor device with ESD protection, comprising:

a guard ring;

5 a MOS transistor array formed in a region surrounded by said guard ring and comprising a first MOS transistor and a second MOS transistor, wherein a channel length of said first MOS transistor is equal to that of said second MOS transistor, and said first MOS transistor is closer to said guard ring than said second MOS transistor is;

a first resistor having one end electrically connected to a gate of said first MOS transistor and the other end grounded; and

10 a second resistor having one end electrically connected to a gate of said second MOS transistor and the other end grounded, wherein a resistance value of said first resistor is greater than that of said second resistor.

2. The semiconductor device with ESD protection according to claim 1, wherein said MOS transistor array further comprises a third transistor and a fourth transistor, a channel length of
15 said third MOS transistor is equal to that of said fourth MOS transistor, and said third MOS transistor is closer to said guard ring than said fourth MOS transistor is, and said semiconductor device further comprises:

a third resistor having one end electrically connected to a gate of said third MOS transistor and the other end grounded; and

20 a fourth resistor having one end electrically connected to a gate of said fourth MOS transistor and the other end grounded.